

Remarks

Status of the Application

Applicants appreciate Examiner's consideration of Applicants amendments and comments filed December 24, 2004.

In the Office Action, the Examiner allowed claims 1-74 and rejected claims 1-3 [sic] and 16-18 under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 5,875,258 to Ortyn et al. (hereinafter "Ortyn") in view of United States Patent No. 6,711,283 to Soenksen (hereinafter "Soenksen"). The Examiner further stated that claims 14 and 15 would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims.

In the Claims

Rejections under 35 U.S.C. §103(a)

Section 2143.01 of the *Manual of Patent Examining Procedure*, provides:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.¹

Ortyn discloses tests and calibration routines for image processing systems and Soenksen discloses an apparatus and method for automatically scanning and digitizing an entire microscope slide. The Examiner states that "it would have been obvious to one having ordinary skill in the art at the time of the invention was made, to modify Ortyn invention according to the teaching of Soenksen because it provides and ensure that higher resolution and high quality image is captured by the scanning process for desired magnification, which can easily be implemented in an image processing such as microscope device." Applicants are not, however, aware of any suggestion that those references be combined or any motivation for combining the Ortyn image processing test and

¹ MPEP § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

calibration routines with the Soenksen scanning and digitizing of an entire microscope slide, recognizing that testing and calibration of a microscope is performed separately from scanning and digitizing a slide using a microscope.

Section 2143.03 of the *Manual of Patent Examining Procedure*, provides:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.²

Claims 1-7

The Examiner apparently rejected claims 1-7 under 35 U.S.C. §103(a) as being unpatentable over Ortyn in view of Soenksen. The Examiner states in the Office Action that “Ortyn fails to disclose, ‘capture a high resolution image of the target that corresponds to the pixels of the low resolution image’. On the other hand Soenksen discloses, digitizing the sample 12 into a large contiguous image, typically at the low optical resolution and variety of method such as the application of morphological algorithms to identify and locate specific types of objects in the image 76, sample 12 (identifies target image), and a decision to return for a ‘high resolution’ interrogation of selected areas of the sample12, using information obtained from the image 76.”

In the Summary, Soenksen explains that the present invention provides an apparatus for and a method of fully automatic rapid scanning and digitizing of an entire microscope sample..., and a method for statically displaying sub-regions of this large digital image at different magnifications together with a reduced magnification macro image of the entire sample.” Applicants submit that the reason an apparatus and a method are disclosed to capture the high resolution image and only a method is disclosed for displaying the sub-regions with a macro image is that the various regions and magnifications of the sample are created from a single image captured by the apparatus.

² MPEP § 2143.01, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Capture of a low to medium resolution microscopic image of a sample is discussed throughout Soenksen. Soenksen further discloses capturing an image 76 and displaying various versions of that image. See e.g., column 21, lines 56-60 ("However, it is possible to display a macro image 102, that is a reduced resolution version of the image 76 on the display monitor 46, together with a higher resolution zoom image 104 that corresponds to a portion of the image 76.") Note that both versions are derived from the same image 76. Soenksen also discloses that a user has the ability to increase the electronic zoom of the zoom image at column 22, lines 15-18. Thus, Applicants submit that the various images referred to throughout Soenksen refer to electronically zoomed images of a single low to medium resolution image captured using a microscope.

Soenksen also discloses that the image of the sample can be used as the basis for a subsequently higher resolution interrogation of selected areas of the sample at column 19, lines 12-15. Soenksen then discloses that a conventional optical microscope or a higher resolution embodiment of the scanner can be used for the higher resolution review of the sample. See column 19, lines 15-19 and column 21, lines 14-18. At column 21, lines 12-18, Soenksen discloses an operator wishing to return to the sample and determining whether to return for a high resolution interrogation of selected areas of the sample using information obtained from the image 76, for example object coordinates obtained from the analysis of the image 76. Thus, in Soenksen an operator, not a processor, determines whether to return for a high resolution interrogation of selected areas of the sample based on the operator's visual inspection of the image, not based on a characteristic of the pixels. Figure 4 of Soenksen illustrates the operation of the microscopy system. See column 16, lines 28-30. The automatic portion of that operation includes steps 202-210, which are enclosed in a dotted line labeled "Digitization of Physical Sample" on Figure 4. See also column 16, lines 53 and 54. Thus, the high resolution review steps 222 and 224 are discretionary in Soenksen and not required as in claim 1 of the subject Application, the decision as to the area to be interrogated in Soenksen is performed by a human operator, whereas the target in claim 1 of the Subject Application is selected by a

processor, and the operator decision whether to perform a high resolution interrogation is based on the operator's visual inspection of the image in Soenksen, not based on a characteristic of the pixels as in claim 1 of the Subject Application.

Pre-scanning is discussed three times in Soenksen. The first is in the Background of the Invention in connection with a disadvantage of the prior art BLISS system at column 3, lines 29-36. Pre-scanning is next mentioned at column 19, lines 59-61 and column 20, lines 8-11, apparently in connection with set-up of the scanning apparatus to determine focus and stage velocity. Thus, there is nothing in Soenksen to suggest that pre-scanning corresponds to the low resolution image capture of claim 1.

Accordingly, because Soenksen does not disclose at least a processor capturing a high resolution image of the target that corresponds to the pixels of the low resolution image determined to contain the target, Applicants submit that Ortyn in view of Soenksen do not disclose the invention claimed in claim 1 of the Subject Application.

Rejections under 35 U.S.C. §102(b)

Claims 8-15

With regard to claim 8, the Examiner stated that Ortyn indicated "during system integrity checking, the central computer, running a real time operating system controls the automated microscope and the 'processor' to acquire and digitize images from the microscopes. The flatness of the slide may be checked, by contacting the four corners of the slide using a computer controlled touch sensor (column 7, lines 12-27)." Applicants submit that the claimed processor that selects at least three points of a sample adjacent a motorized stage, determines stage position for each selected point, focuses the camera on each selected point, determines object distance from the camera lens to the sample at each selected point, and develops a focus surface based on stage position and

object distance for the at least three selected points is not anticipated or obvious in light of a touch sensor contacting the four corners of the slide to check the flatness of the slide. Accordingly, Applicants submit that Ortyn does not disclose at least an imaging apparatus having a processor that develops a focus surface based on stage position and object distance for at least three selected points as recited in claim 8. Moreover, Applicants submit that claim 8 and claims 9 to 15 that depend therefrom are patentable because Ortyn does not teach or suggest all of the limitations of claims 8-15.

Claims 16-18

Regarding claim 16, the Examiner stated, in response to Applicant's submission that Ortyn did not disclose at least a pulsed light that illuminates in response to a stage position sensor, that "Ortyn discloses, Fig. 4, evaluation apparatus uses pulsed for illumination. A beam splitter is positioned to receive the light to split the light into a first beam and a second beam wherein the second beam provides illumination to condenser lens for a microscopic evaluation (column 12, lines 22-47)." The Ortyn strobe repeatability test described in that section indicates a first beam intensity and corrects for long term drift of the strobe intensity but does not describe a pulsed light that illuminates in response to a stage position sensor. For at least that reason, Applicants reassert that Ortyn does not disclose at least a pulsed light that illuminates in response to a stage position sensor as recited in claim 16. Thus, Applicants submit that claim 16, and claims 17 and 18 that depend therefrom, are patentable because Ortyn does not teach or suggest all of the limitations of claims 16-18.

Examiner's Statement of Reasons for Allowance

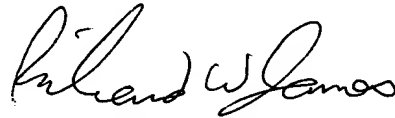
The Examiner stated that "[t]he present invention relates to microscopic digital imaging of complete tissue sections for medical and research use." Applicants agree that the invention relates to microscopic digital imaging, but respectfully submit that the application of that microscopic digital imaging is not limited to complete tissue sections for medical and research use.

Conclusion

Applicants appreciate the Examiners determination that claims 19-41 and 42-74 are in condition for allowance. Furthermore, Applicants respectfully submit that claims 1-18 are in condition for allowance. Accordingly, reconsideration of the present objections and rejections and passage to allowance of claims 1-18 in addition to claims 19-41 and 42-74 at an early date are earnestly solicited.

If the Examiner is of the opinion that the Subject Application is in condition for disposition other than allowance, the Examiner is respectfully requested to contact Applicants' Attorney at the telephone number listed below so that any concerns may be expeditiously addressed.

Respectfully Submitted



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